

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-015954**Date Inspected:** 28-Jul-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

A). Field Splice W1/W2

B). Field Splice W3/W4

C). Field Splice W4/W5

A). Field Splice W1/W2

The QAI observed the excavation of the unacceptable discontinuities discovered during the Ultrasonic Testing (UT) of bottom plate field splice identified as 1W-2W-D2 performed by the QC Technician, Steve McConnell and Jesse Cayabyab. The excavations were performed by welding personnel Fred Kaddu ID-2188 utilizing a high cycle grinder to excavate and remove the defects. At the conclusion of the excavations the QC technician Tom Pasqualone performed a Magnetic Particle Test (MPT) of the excavated areas and no rejectable indications were noted. The application and evaluation of the MPT appeared to comply with the MPT procedure identified as SE-MT-CT-D1.5-101 Rev. 4. The repair welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2mm electrode as per the Welding Procedure Specification (WPS) identified as ABF-WPS-1000 Repair Rev. 2. The WPS was also used by the QC inspector, Mr. Pasqualone, as a reference to monitor and verify the Direct Current welding parameters which were noted as 132 amps. The welding was performed in the flat (1G) position with the work approximately in the horizontal plane and the weld metal deposited from the upper side. The minimum preheat temperature of 60 degrees Celsius and the maximum

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interpass temperature of 230 degrees Celsius was monitored and maintained by the QC inspector during the repair welding.

### B). Field Splice W3/W4

The QAI observed Steve McConnell perform Ultrasonic Testing (UT) of the edge plate field splice identified as WN: 3W-4W-B1. The testing was performed by the QC technician utilizing the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The QC technician performed the required longitudinal wave test for base metal soundness utilizing a 1" diameter transducer and at the conclusion of the longitudinal wave examination, the QC technician performed the shear wave examination utilizing a .75 x .75 rectangular transducer. At the conclusion of the shear wave examination the QC technician noted one (1) UT reject. The UT examination was performed from the "B" face side of the weld joint. The application and evaluation of the MPT appeared to comply with the MPT procedure identified as SE-MT-CT-D1.5-101, Rev. 4.

### C). Field Splice W4/W5

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the edge plate field splice identified as Weld Number (WN): 4W-5W-B1. The Complete Joint Penetration (CJP) groove welding was performed by welding personnel Xiao Jian Wan ID-9677 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3110-3 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector William Sherwood as a reference to perform QC verification of the Direct Current Electrode Positive (DCEP) welding parameters and during the in process production welding. The groove joint appeared to comply with the AWS joint designation identified as B-U2a-GF. The QAI also observed the QC inspector verify the welding parameters and were noted by the QC inspector as follows: 230 amps, 21.5 volts and a travel speed measured at 183 mm/minute. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the 3G position with the work in an approximately vertical plane and with the groove approximately vertical.

### QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW and the FCAW-G processes appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The QAI also observed the erection of the tower section to be located at the southwest corner of the T1 Foundation.

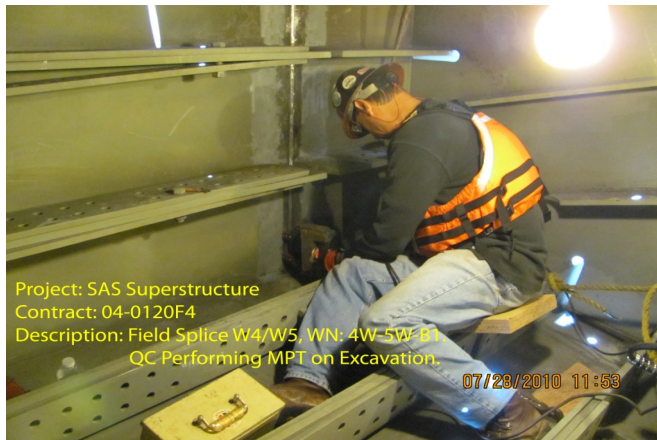
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The digital photographs below illustrate the work observed during this scheduled shift.



### Summary of Conversations:

There were general conversations with Quality Control Inspector's Tom Pasqualone, Steve McConnell and Jesus Cayabyab at the start of the shift regarding the location of American Bridge/Fluor welding personnel and inspection/ N.D.E. testing scheduled for this shift.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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**Inspected By:** Reyes,Danny

Quality Assurance Inspector

**Reviewed By:** Levell,Bill

QA Reviewer

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